

FIG. 1

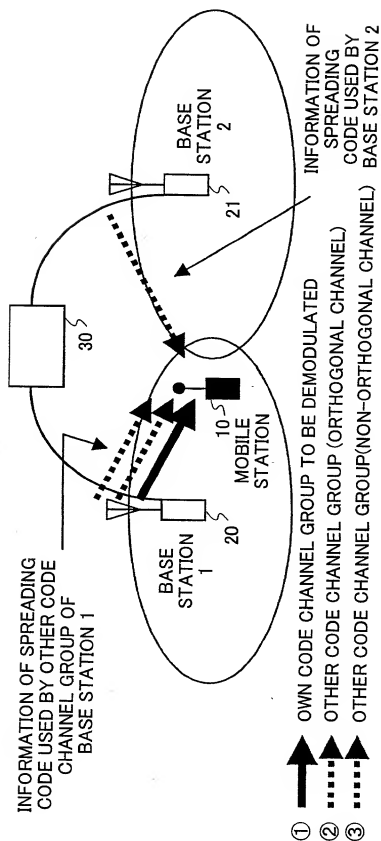


FIG.2

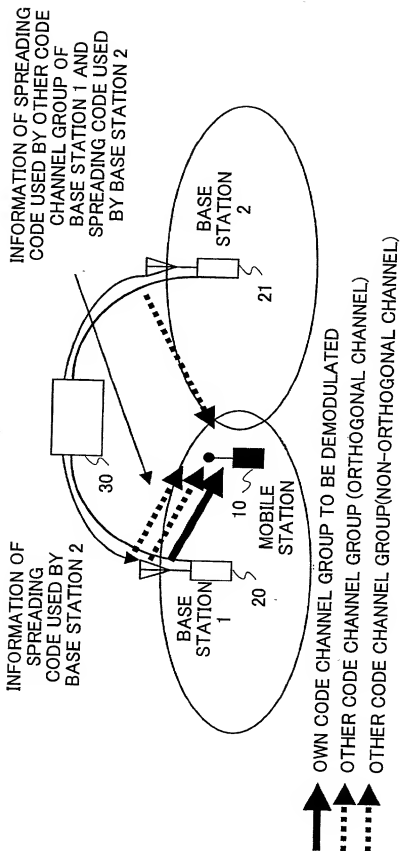


FIG.3A

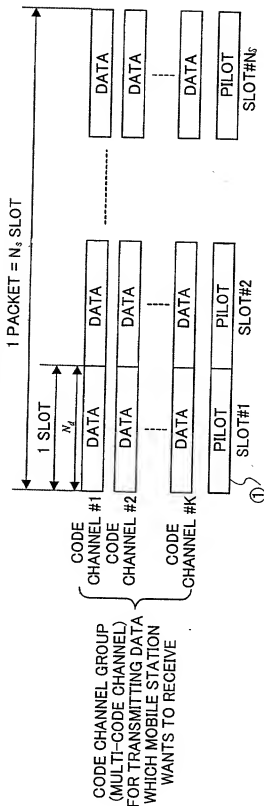


FIG.3B

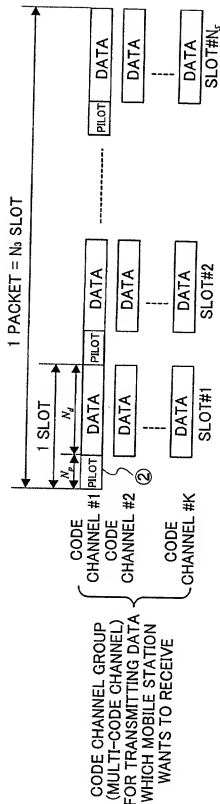
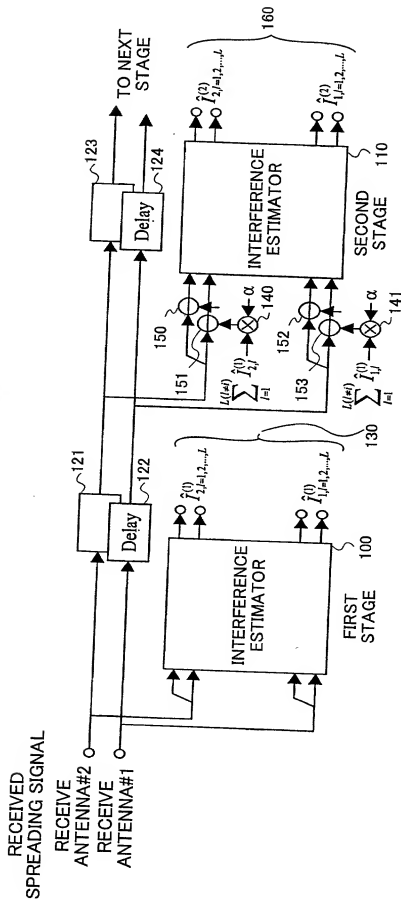


FIG. 4



The diagram illustrates a multi-carrier communication system architecture. At the bottom, a set of antennas (400) with  $L$  elements receives signals across  $K$  frequency carriers. These signals enter a RAKE/ANTENNA DIVERSITY COMBINING PARTS block (210), which contains a DESPREAD PART (201) and a summing junction (205). The output of the despread part is multiplied by a reference signal (203) at the summing junction to produce a combined signal (204). This signal is then processed by a P/S CONVERTER (220) and an ERROR CORRECTION DECODER (230). The output of the decoder is fed back to the DESPREAD PART (201) via a feedback path (240) and also passes through a filter (F) and an S/P CONVERTER (270) to a DATA MODULATOR (260). The DATA MODULATOR (260) outputs a DEMODULATED DATA SEQUENCE (250). The combined signal (204) is also fed into a CHANNEL ESTIMATORS block (300), which includes a DESPREAD PART (302) and a summing junction (304). The output of the channel estimators is fed back to the DESPREAD PART (201) via a feedback path (310). The combined signal (204) is also fed into a SPREADING PARTS block (320), which includes a DESPREAD PART (324) and a summing junction (323). The output of the spreading parts is fed back to the DESPREAD PART (201) via a feedback path (330). The combined signal (204) is also fed into a SPREADING PARTS block (340), which includes a DESPREAD PART (341) and a summing junction (343). The output of the spreading parts is fed back to the DESPREAD PART (201) via a feedback path (350). The combined signal (204) is also fed into a SPREADING PARTS block (360), which includes a DESPREAD PART (361) and a summing junction (363). The output of the spreading parts is fed back to the DESPREAD PART (201) via a feedback path (370). The combined signal (204) is also fed into a SPREADING PARTS block (380), which includes a DESPREAD PART (381) and a summing junction (383). The output of the spreading parts is fed back to the DESPREAD PART (201) via a feedback path (390).

FIG. 6

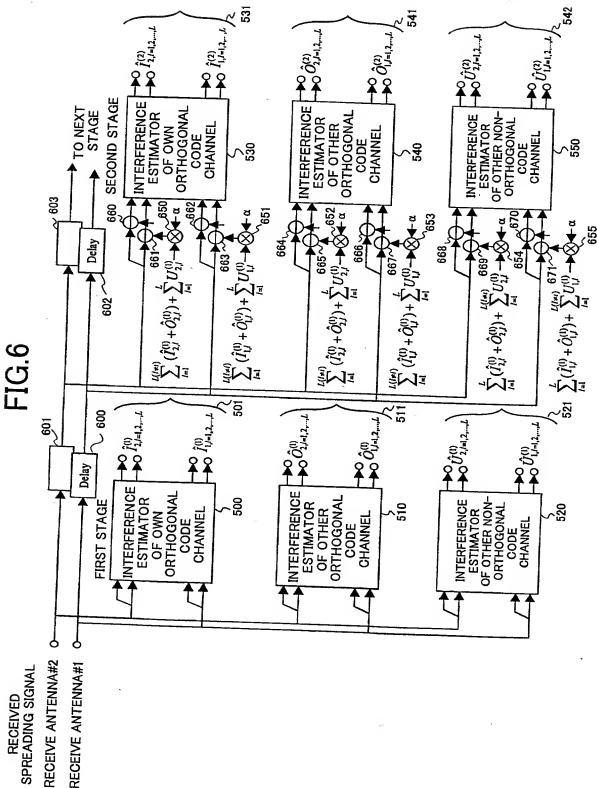


FIG. 7

RECEIVED  
SPREADING SIGNAL  
RECEIVE ANTENNA#2  
RECEIVE ANTENNA#1

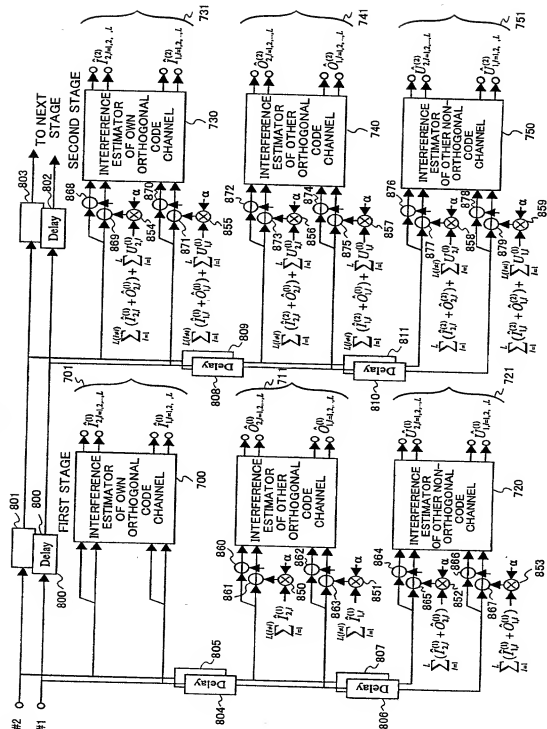


FIG. 8

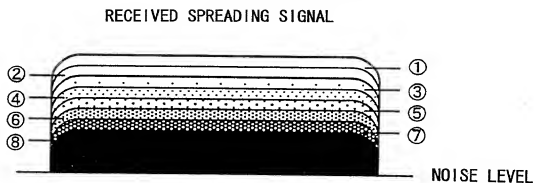




FIG. 9A

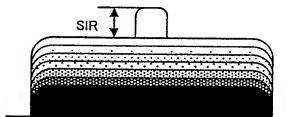


FIG. 9B

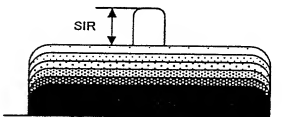


FIG. 9C

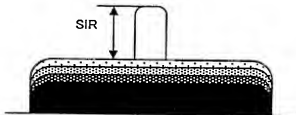


FIG. 9D

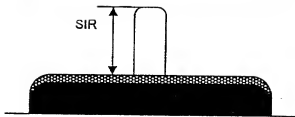


FIG. 9E

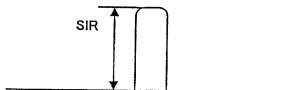


FIG. 10

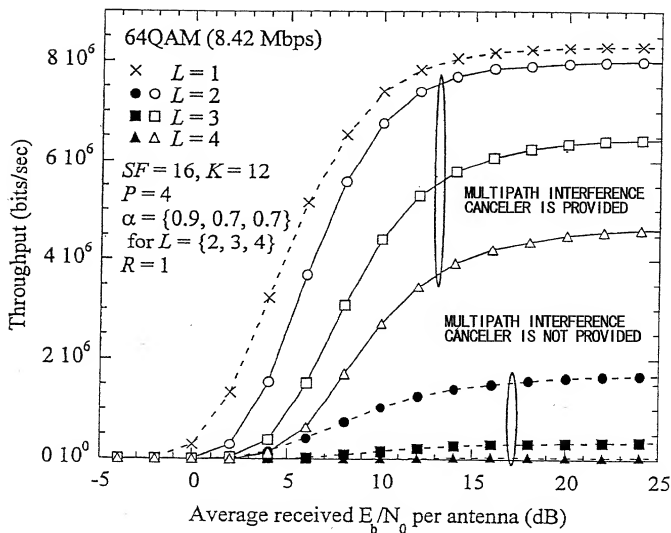


FIG. 11

Chip rate		3.84 Mcps
Symbol rate		240 kpsps
Information bit rate		8.42 Mbps
Spreading factor (SF)		16
Number of multicodes		12
Spreading code	Channelization code	Tree-structured orthogonal sequences
	Scrambling code	Truncated Gold sequence
Modulation	Data	64QAM
	Spreading	QPSK
Channel coding / decoding		Convolutional coding (Rate=1/2, k=9) / Soft decision Viterbi decoding
Antenna diversity		2-branch
Channel model		$L$ -path Rayleigh $f_D = 80$ Hz